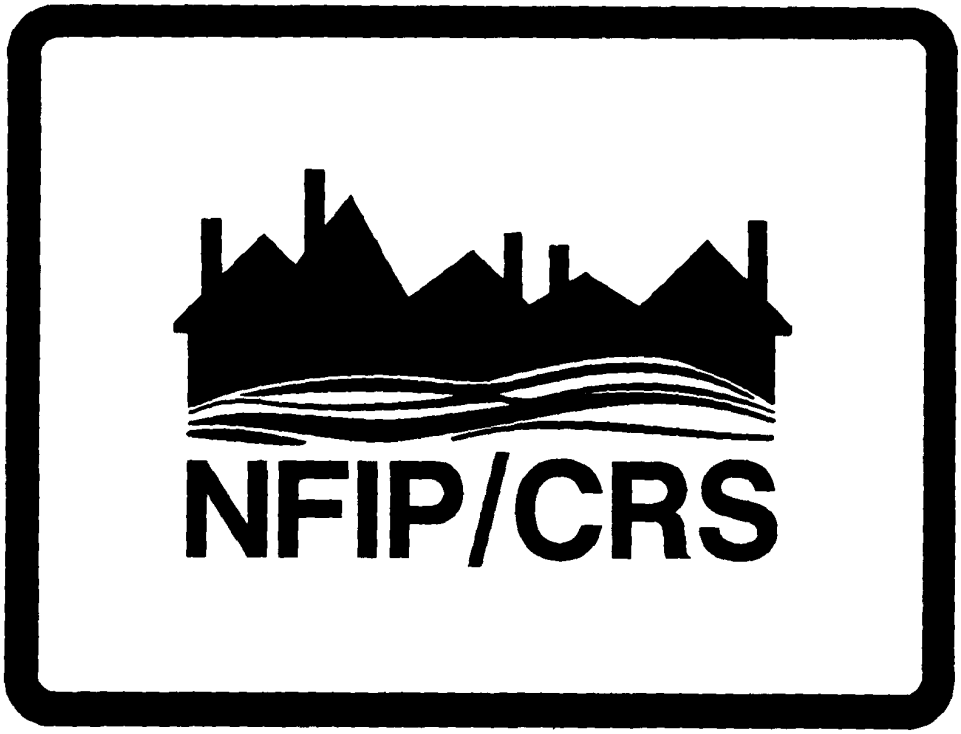
FEDERAL EMERGENCY MANAGEMENT AGENCY

**National Flood Insurance Program**
**Community Rating System**




# CRS CREDIT FOR FLOOD WARNING PROGRAMS

**January 1999**

**Note on this January 1999 Edition:** This document was revised to reflect the following changes in the 1999 *CRS Coordinator's Manual*:

- Removes the requirement to submit a flood impact analysis as a prerequisite for Flood Threat Recognition System (FTR) credit. The analysis remains a requirement for Emergency Warning Dissemination (EWD), Other Response Efforts (ORE), and Critical Facility Planning Credit (CFP). A description of local flood hazards and their potential impacts helps a community determine evacuation requirements, response and mitigation priorities, and the amount of time needed for warning. The vulnerability analysis helps a community decide whether its response and mitigation efforts are appropriate considering its level of risk.

- The use of AM radio transmitters to provide local warning was added to the list of methods eligible for credit points under Emergency Warning Dissemination (EWD).

- The credit points for an outdoor voice-sound system or a fixed siren system were reduced from 20 to 15 points. At the same time the credit points for telephone warning systems that reach all floodplain residents were increased from 10 to 15 points.

- A provision that makes it possible to consider other methods of warning was added to EWD.

This document was prepared for the Community Rating Task Force by the Insurance Services Office, Inc., with support from French & Associates, Ltd., Berry A. Williams & Associates, Inc., and the Association of State Floodplain Managers, Inc.

If a community is interested in applying for flood insurance premium credits through the Community Rating System (CRS), it should have the *CRS Application*. The *CRS Coordinator's Manual* provides a more detailed explanation of the credit criteria. These and other publications on the CRS are available at no cost from:

Flood Publications
NFIP/CRS
P.O. Box 501016
Indianapolis, IN 46250-1016
(317) 848-2898
Fax: (317) 848-3578

They can also be viewed and downloaded from FEMA's Website, ***www.fema.gov***

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# CREDIT CRITERIA

Hundreds of flood warning and response programs have been implemented in the last two decades. Their performance over this period has shown them to be an efficient and effective means of reducing losses of life and property from flooding and consequently, they have received increased attention in recent years. The Community Rating System (CRS) encourages comprehensive flood warning and response programs and recognizes them under Activity 610 (Flood Warning Program).

The requirements for crediting Activity 610 are explained in the *CRS Coordinator's Manual*. This publication expands on the *Coordinator's Manual* and provides an example submission for the fictitious community of Planton. The Planton example is intentionally simple so that the concepts of the CRS credit criteria are readily apparent. This publication uses the same section numbering system as the *Coordinator's Manual* and its activity worksheets.

## 610 Flood Warning Program

Activity 610 has four elements that provide credit for four levels of involvement in flood warning and flood response planning:

1. The first level is to operate a system that tells the community that a flood is on its way. This is termed a flood threat recognition system and is recognized as element FTR in this activity. The notice that a flood is coming can be provided by the National Weather Service, by a state or regional agency, by monitoring local rain and river gages, and/or in other ways. However, the community must have a system for receiving meaningful early notifications.

2. The next level of involvement is to disseminate the flood warning to residents of the community. This element is termed emergency warning dissemination and is shown as the acronym EWD. Various methods can be used, such as sirens, telephone calls, or the Emergency Alert System. The credit points are based on the dissemination methods used. Credit for this element is available only if the community has a creditable flood threat recognition system, an annual outreach project that covers flood warning and flood safety and reaches at least 90% of the target audience, and an adopted flood response plan.

3. If the community implements the first two elements, then it is eligible for credit for implementing the third level of involvement. Under this third element, other response efforts (ORE), credit is provided for activities undertaken by the community to minimize flood damage. These include activities like sandbagging, coordinating evacuation, barricading flooded streets and bridges, and issuing status reports to the media.

4. If the community implements the first two elements, then it is also eligible for credit for implementing the fourth level of involvement: coordination of the flood warning and response effort with critical facilities. A critical facility is a structure or a site that, if flooded, would result in severe consequences to public health and safety. Examples include hospitals, emergency operating centers, key bridges, and hazardous materials storage areas. Providing these facilities with early warning and coordinating with their flood response plans is recognized under the element critical facilities planning (CFP).

## 611 Credit Points

This section discusses how the community's flood warning and response program is scored for CRS credit. The credit points are provided if the community can provide the necessary documentation that shows how its program works. It is important to note that to receive credit for the last three elements, they must be covered in an adopted flood response plan. The documentation requirements are discussed in Section 614.

### a. Flood Threat Recognition System (FTR)

This section provides credit points for two different types of systems. Subsection 2.a is used for those systems that depend on an outside notice of an impending flood. The notice may come from the National Weather Service, the National Hurricane Center, the U.S. Army Corps of Engineers, the Bureau of Reclamation, or other agency that provides flood warnings or river level statements.

Usually this type of system is operated on major rivers and coastal areas where there is more lead time of an impending flood. This system is used by Planton for the Planton River as noted in the example on page 35.

Subsection 2.b is used to calculate the credit points for a localized system. This type of system is used on smaller streams, especially in mountainous areas where there is little lead time. It relies on local volunteers or automatic rain and river gages to provide real-time data that can be used to develop early warning of flooding or potential flood conditions. It may be operated by the community, by a regional entity, or by a state agency. Planton uses this type of system on Little Creek (see page 35).

If a system does not cover all of a community's sources of flooding, the areas covered and not covered are factored in during the impact adjustment (see Section 613).

***NOTE*: *If a community cannot qualify for credit for its flood threat recognition system, then there is no credit for Activity 610. The CRS does not credit a warning program unless the community has a system that tells local officials that a flood is coming.***

**1. Prerequisites**. To receive credit for either type of flood threat recognition system, the data collection, communications, and data analysis components of the system must be maintained regularly and tested at least annually.

The application for credit must describe the community's flood threat recognition system. This description must include an identification of flood hazards; an explanation of the data collection, communications and data analysis components of the system; an explanation of how and when system components are maintained and tested; and the amount of warning lead time the system provides for each source of flooding covered by the warning program. See Section 614.a. for a discussion of these requirements.

**2. Credit Points**. A total of 40 points is available for either type of system. The scoring is shown below:

(a) Non-local flood threat recognition system: Examples of these systems include the National Hurricane Center's notices and river stage reports from the National Weather Service, U.S. Army Corps of Engineers, Bureau of Reclamation, Tennessee Valley Authority, or other agency that monitors river stages. If the community uses such a service, the score for the flood threat recognition system is the total of (1) and (2), as follows:

(1) 20 points if the community demonstrates in its documentation that it is prepared to receive flood warnings on a 24-hour basis. The community's program must meet the following three requirements.

((a)) Monitoring equipment, such as the NOAA Weather Wire or NOAA Weather Radio, must be located in an office that will be able to respond to the notice 24 hours a day. Typical locations are police or fire dispatch offices.

((b)) The documentation (see pages 35 and 41–42) must identify a person responsible for monitoring the system. That person must also have instructions on what to do once a flood threat is recognized. For example, the instructions could have the dispatcher call the emergency manager or implement other specified flood response steps. These credit points are also provided if the county or another agency monitors the flood threat recognition system and there are procedures to contact someone in the community on a 24-hour basis.

((c)) The information received must be keyed to one or more specific sites in the community. A system that provides a National Weather Service notice of predicted stream levels at a gage or other reference location, such as a bridge, in or near the community is creditable. However, a general National Weather Service notice, such as "low-lying areas may flood" or spring snowmelt forecasts, is not creditable.

(2) Up to 20 more points are provided if the community's system qualifies for credit under (1) and relates the data received to local conditions:

((a)) 5 points if a manual technique is used to predict arrival time and peak flow or elevations; or

((b)) 20 points if a computerized flow or storm surge prediction model (e.g., HEC-2 or HUREVAC) is used to analyze the data to produce more locally pertinent flood threat information. This model may be either a "real-time" model run during the flood, or maps, charts, and other output from a model that provides detailed data for points other than those specifically forecast in Section 611.a.2(a)(1). Examples of such programs include:

- Using a flood profile produced by computer modelling (e.g., the profile in the community's flood insurance study) and a contour map to determine the area along the river that will be inundated by the flood that has been forecast;

- Using SLOSH inundation maps to convert a forecast from the National Hurricane Center to a predicted area of inundation throughout the community; or

- Using a forecast peak flow at one point on a river from the National Weather Service or an IFLOWS system and the HEC-2 backwater model to produce a map of inundation areas throughout the community.

(b) Localized flood threat recognition system: These systems include monitoring upstream river and rain gages by volunteers, neighboring communities, or others who report the data to an emergency operating center or other location or ALERT, IFLOWS, and similar automated systems for transmitting the gage data to a microprocessor that converts the data to a flood prediction.

The credit points for the flood threat recognition system for this type of nonfederal system are the total of the credit points in (1), (2), and (3) as follows:

(1) Either:

((a)) 15 points for a collection system based on precipitation, rainfall, and/or river gage data that are manually read and reported (e.g., by volunteer); or

((b)) 20 points for an automated precipitation and/or river gage data collection and reporting system (e.g., IFLOWS, ALERT, or comparable system);

Under both ((a)) and ((b)), the flood threat recognition system is based on upstream river and rain gages. The difference between the two is that 15 points are provided for a system that relies on human gage readers to call the readings in and 20 points are provided for an automated system. The latter is usually used in remote areas or in mountains where speed is vital.

(2) 10 points are provided if the density of the gaging network is at least one rainfall gage per 10 square miles of watershed or if all upstream tributaries with watersheds larger than 10 square miles are gaged. In general, the more gages there are, the more useful the data and the more accurate the prediction.

(3) Either:

((a)) 5 points are provided if a manual technique is used to predict downstream arrival time and peak flow or elevations; or

((b)) 10 points are provided if a computerized flow prediction model is used to analyze the data collected to predict arrival time and peak flow or elevations. The prediction points must be in the community or close enough to it to ensure that the prediction is applicable to the community's emergency response plan.

Under both ((a)) and ((b)), the gage data are analyzed to predict downstream arrival time and peak flow or crest elevations. More points are provided for a computerized analysis because the results are usually more accurate and quicker.

### b. Emergency Warning Dissemination (EWD)

This element credits arrangements for disseminating a flood warning to the general public.

**1. Prerequisites**. There are five prerequisites for this element:

(a) The community must receive flood threat recognition system credit under Section 611.a.

(b) The community must have adopted an emergency response plan (see Section 614.b, page 14). The term "plan" includes annexes and standard operating procedures (SOPs) that may be developed pursuant to the plan. The items for which EWD credit is requested must be in that plan or in its annexes or procedures.

(c) The warning must be disseminated in ways that can reach people in a timely manner, including under conditions of night or heavy storms. To show that a community can provide warning in a timely manner, a description of the areas affected by flooding and the impact of the flooding on those areas must be provided with the local government's documentation (see Section 614.a.1, page 14). If the warning lead time is under 12 hours, it is not sufficient to rely solely on radio and TV announcements. In coastal communities, hurricane and tropical storm warnings are provided 24 hours in advance, so using the Emergency Alert System would suffice. However, as noted below, more points are available for using multiple methods of disseminating the warning.

(d) The warning dissemination equipment and procedures must be tested at least annually. This requirement is met if (1) the tests are done specifically for a flood warning drill, (2) if the community responds to a real flood warning, or (3) if there is a drill or real warning to respond to another hazard provided the personnel and equipment involved are substantially the same. For example, if both flood warnings and tornado warnings are disseminated via siren activated by the fire department, an annual test or drill of either, or an event for which the system was used, will meet this requirement for that method of dissemination.

(e) The community must conduct an annual outreach project that covers the topics "flood warning" and "flood safety" as discussed in Section 331. This may be credited under elements 1.OPC, OPF or OPS under Activity 330 (Outreach Projects) or a project that is not credited by CRS but reaches at least 90% of the properties in the floodplain. If an OPS is

used, the public information strategy document must discuss the best way to publicize warning and safety information to the target audience.

Many floodplain residents may not know whether a siren means a flood, a fire, a tornado, or an invasion. Even if they know that a flood is on the way, often they do not know what to do. Therefore, for CRS credit for warning dissemination, the community must have an annual program to tell the public about its warning program and flood safety measures, such as evacuation.

The criteria for this requirement are spelled out in Activity 330 in the *CRS Coordinator's Manual* and in *CRS Credit for Outreach Projects*. The latter publication includes a brochure used in the Denver area to advise residents about flood warnings and flood safety.

The National Weather Service is developing a new warning accreditation program known as "StormWise." A voluntary, incentive driven program, StormWise encourages local governments to improve the timeliness and effectiveness of hazardous weather warnings for the public. The StormWise Program was originated by the NWS office in Tulsa, Oklahoma. At present, it is a pilot program being implemented only in eastern Oklahoma and northwest Arkansas—the area of responsibility for the Tulsa Weather Forecast Office. Plans are to expand the program to other areas of the country after policies and procedures have been tested in the pilot program. When it is finalized, CRS credit may be provided for participating communities under Section 611.b.2(h).

**2. Credit Points**. Credit for Emergency Warning Dissemination (EWD) is the total of the following points as listed in (a) through (h):

(a) 10 points are provided for having adopted procedures that specify when and how a warning is issued and the messages to be disseminated under different conditions. The documentation must include instructions so the staff can quickly issue the appropriate warnings. Without such a policy, staff members may debate whether the recognized flood threat warrants a warning or they may not know whom to warn or when. This credit recognizes a system that encourages quick action to provide the proper early flood warning.

(b) 15 points are provided for either an outdoor voice-sound system or a fixed siren system serving the flood hazard area.

(c) 30 points are provided for disseminating warnings by door-to-door contact or mobile public address systems. This approach allows site-specific messages to be given to residents in threatened areas.

(d) 10 points are provided for warning dissemination through the Emergency Alert System.

(e) 15 points are provided for warning dissemination by telephone to ALL FLOODPLAIN OCCUPANTS. A telephone calling tree or automatic telephone dialing system can be credited. However, the prerequisites listed above must be kept in mind: the system must provide

adequate lead time and be tested annually. Telephone numbers must be updated annually. A telephone procedure that only contacts community staff or critical facilities is not credited under this element.

(f) 10 points for warning dissemination using a cable television override system.

(g) 10 points for local AM radio transmitters used for public warning announcements. Due to gaps in the NOAA Weather Radio coverage area, some local governments have installed or contracted with other AM radio transmitter sites to expand the warning area. In addition to flood warning and evacuation messages, some local governments find these stations helpful in disseminating information on public safety and property protection measures.

(h) Additional points may be possible for warning systems not listed. Communities should submit requests for such credit to their ISO/CRS Specialist.

The maximum score for EWD is 60, even if a community's program adds up to more than 60 points. If a community disseminates flood warnings using methods not listed above, it should submit the appropriate documentation and it will be appropriately scored.

### c. Other Response Efforts (ORE)

This element credits the flood response tasks undertaken by the community, other agencies, the private sector, and volunteer organizations. These tasks should be itemized in the community's flood response plan.

**1. Prerequisites**. There are three prerequisites for credit:

(a) The community must receive credit for its flood threat recognition system and for disseminating a flood warning to the general public (see Sections 611.a and b).

(b) The community must conduct at least one exercise of the response plan each year. The exercise may be a table top exercise, drill, or response to an actual disaster. If the flood response plan is part of a multi-hazard plan, then the exercise may be in response to another type of disaster provided the parties and tasks involved are substantially the same.

(c) The other response tasks must be included in the community's adopted flood response plan (see Section 614.b, page 15).

**2. Credit Points**. Credit for Other Response Efforts (ORE) is the total of the following points listed in Sections (a) through (c):

(a) 20 points are provided if the community has a flood response plan or multi-hazard plan keyed to specific predicted flood levels furnished by the flood threat recognition system. For example, many coastal communities have different plans and different task assignments for

different categories of hurricanes. Response tasks are keyed to predicted water or wave heights and the estimated time remaining until landfall.

Riverine flood response plans are usually keyed to flood stage predictions at specific locations. A flood stage forecast map shows the areas inundated at each stage, so the community emergency planners can develop appropriate task assignments for each level. Examples of flood stage forecast maps are provided for Watertown on page 610-7 of the *Coordinator's Manual* and for Planton on page 40.

(b) 10 points are provided if the plan, its appendices, or approved standard operating procedures (SOP) identify responsibility for flood response tasks for the community's staff and other public and private organizations. The tasks vary according to the flood hazard and the community's resources. Examples are sandbagging key facilities, moving city vehicles or building contents, barricading and monitoring threatened bridges, and coordinating evacuation of a school.

The staff to whom tasks are assigned will also vary. At a minimum, it should include employees of the community like the emergency manager and police, fire, and public works personnel. A good plan coordinates with other agencies, such as the school district, adjacent cities and counties, the state police, and the National Guard, and private organizations such as the Red Cross, utility companies, and suppliers of flood fighting materials.

If the other agencies and organizations agree, their activities should be included in the task assignments to help plan for a coordinated flood response. Examples of staff assignments are provided for Watertown on page 610-11 of the *Coordinator's Manual* and for Planton on pages 42–45 and 48–49.

(c) 20 points are provided if the plan includes a summary of the estimated resources required, the time required to carry out each flood response task, and sources of the necessary resources. This credit is provided for those plans that include the details of how the task assignments will be implemented.

For example, if a building is to be sandbagged, this credit would be provided if the plan notes who is responsible, how many sandbags will be needed, how long it will take, and where the bags, sand, and plastic sheeting will be obtained. An example for Planton is on pages 41–48.

### d. Critical Facilities Planning (CFP)

This element credits warning and coordinating with critical facilities. The CRS defines four types of critical facilities:

- Those structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic, and/or water-reactive materials;

- Hospitals, nursing homes, and housing likely to contain occupants who may not be sufficiently mobile or otherwise able to avoid death or injury during a flood;

- Police stations, fire stations, vehicle and equipment storage facilities, and emergency operations centers that are needed or contain equipment needed for flood response activities before, during, and after a flood; and

- Public and private utility facilities that are vital to maintaining or restoring services to flooded areas before, during, and after a flood.

The community should develop its own list of facilities that are critical to the flood response (e.g., emergency operating center, hospital, etc.) or that would cause special problems during a flood (e.g., wastewater treatment plant, chemical storage areas, etc.).

**1. Prerequisites**. There are three prerequisites for credit:

(a) The community must receive credit for the flood threat recognition system and for disseminating a flood warning to the general public (see Sections 611.a and b).

(b) The community must update the information on the critical facilities at least annually.

(c) Coordination with critical facilities must be included in the community's adopted flood response plan (see Section 614.b, page 15).

**2. Credit Points**. There are three ways to credit Critical Facilities Planning, CFP1, CFP2, and CFP3. These are numbered separately because they have different impact adjustments.

(a) CFP1: 10 points are provided if the flood response plan includes the names and telephone numbers of the operators of critical facilities affected by flooding. The list must include the names of either those people responsible for day-to-day operation of a facility or a contact person designated by the facility. Examples of the latter would be the facility's security office or emergency manager.

(b) CFP2: 20 points are provided if the community has arrangements for providing special warnings or early notifications directly to the facilities that need them. Not all critical facilities will need an early warning, but coordination with them will identify those that do. Some may want as early a notice as possible in order to implement their own flood response plans. Others may need a direct call because they cannot be reached by the system that warns the general public or they need specific flood data provided by the flood threat recognition system. There is no credit if the community only notifies other city departments unless the community owns all of the critical facilities in the floodplain.

(c) CFP3: 20 points are provided if the critical facilities that need them have their own flood response plans that have been developed or reviewed by the community. Many larger facilities have their own emergency plans. These 20 points are provided if the community has

reviewed the plans so it can better coordinate the community's and the facilities' responses to flooding.

## 612 Impact Adjustment

The impact adjustment ratios modify the credit points for those elements that do not cover all of the community's flood problem. For example, if the community can only provide a warning to two-thirds of its floodprone residents, then it will receive only two-thirds of the credit for Early Warning Dissemination (EWD).

The ratio of residents that receive the early warning (EWD) is shown by the acronym rEWD. Each element has its own ratio or "r" variable, which reflects the impact of the element on the flood problem. For FTR, EWD, and ORE, the flood problem is defined as the number of buildings in the Special Flood Hazard Area (SFHA). The SFHA is the 100-year floodplain shown on the community's Flood Insurance Rate Map (FIRM). For CFP, the flood problem is the number of critical facilities in the SFHA.

Impact adjustments are done mathematically by multiplying the value of an element by the ratio or "r" variable for that element. This produces the credit or "c" variable for the element. For example, cEWD = EWD x rEWD.

There are three ways a community can obtain the value for the "r" variables in order to make the impact adjustment: Options 1, 2, and 3.

### a. Option 1

Option 1 is used when an element covers the entire flood problem.

1. If the flood threat recognition system, the warning dissemination system, or the flood response efforts cover the entire SFHA, then rFTR, rEWD, and rORE = 1.0. Under Option 1, the credit points for an element are multiplied by 1.0, that is, they are not reduced. If the element does not affect or impact all buildings in the SFHA, then Option 1 cannot be used. The "r" variable will be less than 1.0 and the result will be less credit for the element. If the flood threat recognition system does not cover the entire floodplain, then Option 1 cannot be used for any of the elements.

2. If all critical facilities affected by flooding have their own flood response plans, rCFP3 = 1.0. There is no impact adjustment for CFP1 and CFP2. If the community's program does not cover all critical facilities affected by flooding, then CFP1 and CFP2 = 0.

### b. Option 2

If an element does not cover the entire SFHA, then the impact adjustment reduces the score to account for the fact that the community cannot do 100% of the job. Under Option 2, a default value worth 25% is given for the "r" variable.

1. If the flood threat recognition system, the warning dissemination system, or the flood response efforts cover less than the entire SFHA, then rFTR, rEWD, and rORE = 0.25.

2. If only some of the critical facilities have their own flood response plans, rCFP3 = 0.25.

Using Option 2 means that a community will always get at least 25% of the credit for its flood warning program no matter how little of the SFHA it actually covers. This default value also helps communities that find it difficult to use Option 3.

### c. Option 3

Under Option 3, the impact adjustment bases the values of the "r" variables on the number of buildings in the SFHA that are covered. There is no Option 3 impact adjustment for Critical Facilities Planning (CFP).

The impact adjustment ratios for FTR, EWD, and ORE are computed by dividing the number of buildings affected by each element by the total number of buildings in the SFHA (bSF):

$$rFTR = \frac{bFTR}{bSF} \quad rEWD = \frac{bEWD}{bSF} \quad rORE = \frac{bORE}{bSF}$$

The number of buildings in the SFHA affected by an element is shown with a lower case "b," as in "bFTR" and "bEWD." The number of buildings in the SFHA is shown as "bSF." bSF must be the same number used for bSF in several other CRS activities. It is explained in more detail on pages 300-7 through 300-8 of the *Coordinator's Manual.*

Buildings credited for bFTR, bEWD and bORE must be within the community's regulatory floodplain. The regulatory floodplain may include areas outside of the SFHA mapped by the Federal Emergency Management Agency (FEMA). Such areas must be included in the aRF (area of the regulatory floodplain) for Activities 410, 420 and/or 430 if credit is requested for those activities. If not, the community must provide maps or other documentation to show that the buildings are within the floodplain that it regulates.

In most cases, a flood warning program is implemented throughout the community. This may include both the regulatory floodplain and B, C, D, or X-Zones that are not mapped for flooding. Where a community implements a warning program that serves everyone in the SFHA, the impact adjustment variables for those elements are 1.0. When the warning program does not cover the entire SFHA flood warning credit will be reduced.

For example, suppose a community has a large river and a coastal area shown on its FIRM. There are 100 buildings within the coastal SFHA and there are 20 buildings within the river's non-coastal SFHA. bSF = 120. The community has a flood threat recognition system for coastal flooding, but not for flooding on the non-coastal reach of the river. bFTR = 100, and

$$rFTR = \frac{bFTR}{bSF} = \frac{120}{100} = 0.83$$

Similarly, rEWD cannot be greater than rFTR. A community cannot receive credit for disseminating flood warnings in areas not covered by the flood threat recognition system.

The impact adjustment can be used to score communities subject to two or more different sources of flooding. In many cases, coastal communities subject to hurricane surge may also have a riverine flood problem. If the flood threat recognition systems or the flood response plans are different in each area, they are treated separately. This approach is used by Planton for the different systems on the Planton River and Little Creek (see pages 19–20).

## 613 Credit Calculation

In the final formulae for Activity 610, each element's value is multiplied by its impact adjustment (the "r" variable):

a. cFTR = FTR x rFTR

b. cEWD = EWD x rEWD

c. cORE = ORE x rORE

d. cCFP = CFP1 + CFP2 + (CFP3 x rCFP3)

Where the community uses Option 1 for the impact adjustment, the value of the element is multiplied by 1.0 and the total credit is not reduced. If the community chooses Option 2, the value is multiplied by 0.25. Under Option 3, an element's value is multiplied by the "r" variable based on the portion of the buildings in the SFHA that are affected by the element.

The results of these formulae are added together to obtain the total credit points for Activity 610:

e. c610 = cFTR + cEWD + cORE + cCFP

## 614 Credit Documentation

In order to confirm that a community's program meets the CRS credit criteria and to assist in calculating credit points, several types of documentation must be submitted with the request for credit. For a community's first application for a CRS classification, worksheet page 43 of the *CRS Application* is submitted along with the documentation described below. A blank copy of this worksheet page is found at the end of the *CRS Application*.

Subsequent requests for credit are called modifications. Modifications include the three activity worksheets AW-610, AW-611 and AW-612 along with the documentation described below. These worksheets are also used by the ISO/CRS Specialist to calculate the community's verified credit. Completed examples appear on pages 610-20 through 610-22 of the *CRS Coordinator's Manual* and pages 26–28 of this publication.

A community may also opt to use the CRS Calculation Software, which calculates the points nad prints the worksheets. The *CRS Application*, the software and the paper Activity Worksheets can be ordered using the form in Appendix E of the *Coordinator's Manual* (or by contacting the office listed on the inside of the front cover of this publication).

Section 614 is the same on the *CRS Application* page 43 and on AW-611 and AW-612. This section is a checklist for the documentation listed below. These items are needed to confirm that the community's program meets the CRS credit criteria. If there is more than one item, each should be labeled as "Attachment 1," etc., for easy reference. Failure to submit the correct materials or adequately mark where the credited elements are addressed will mean delays in reviewing and crediting the community's program.

One way to help the reviewer find what is needed is to write a short narrative of the community's program. This report can include some of the specific statements needed for credit for the various elements and can reference portions of other documents as attachments.

For example, the narrative report could describe the equipment used for flood threat recognition in a few sentences and refer to a map attached from another document. The narrative report could also state that maintenance is performed at least annually. The narrative report can be used to document the impact adjustment ratios. Examples of such narratives are shown for Watertown in the *Coordinator's Manual* on pages 610-6, and 610-9 through 610-17.

Many municipal warning systems or response plans are part of county emergency management programs. It must be noted that each community is responsible for ensuring that its submittal is complete. It is the applicant's responsibility to send in all documentation, including items handled by the county or another agency.

On the other hand, the CRS has recognized "uniform minimum credit" for this activity where many communities share a system or are part of a larger system. Under this approach, the CRS reviews one application, usually assembled by the operator of the system. All participating communities receive the same credit, although the impact adjustments may be different, depending on how much of the community's floodplain is covered by the system.

Under the uniform minimum credit approach, communities submit less documentation. They may only need to show that they are participating in the system. They would also need to submit materials to receive credit where their systems have additional items not covered by the larger system. For more information on uniform minimum credits, contact the office listed on the inside of the front cover.

### a. Flood Threat Recognition System Description

The community must submit a description of the community's flood threat recognition system with its submittal. The following items must be included and the margins must be marked so these items can be located by the reviewer. Mark the document as indicated:

1. A description of the flood hazard (note "flood hazard" in the margin). The area affected by flooding should be shown on a map or otherwise described. The description needs to include information about the nature of the flood hazard, such as depths, velocities, warning times, historical flood problems, and special hazards. Examples of flood hazard descriptions are found on pages 610-15 through 610-16 of the *Coordinator's Manual* and on page 31.

2. A description of the areas affected by flooding and the impact of flooding on those areas (note "flood impact"). The following types of items should be covered:

    - Number and types of buildings;
    - Land use (e.g., residential, commercial, industrial, open space, etc.);
    - Critical facilities; and
    - Historical flood problems, such as health and safety hazards.

Examples of flood impact descriptions are found on page 610-16 of the *Coordinator's Manual* and on pages 32–34.

3. A description of the flood threat recognition system (write "FTR" in the margin). The description should cover the items needed for credit, including the provisions for maintenance and testing as listed in Section 611.a on pages 2–5. Examples are provided for Watertown on page 610-6 of the *CRS Coordinator's Manual* and for Planton on pages 35–36.

4. Flood warning lead times for each source of flooding covered by the program (note "flood warning times"). These times can be estimated. Examples are provided for Watertown on page 610-17 of the *Coordinator's Manual* and for Planton on page 36.

### b. Flood Response Plan

If the community wants to apply for any of the last three elements, EWD, ORE, or CFP, it must submit documentation that these elements are part of its flood response plan. The flood response plan is the document or documents that guide the community's emergency managers during and after a flood. It may have different names in different communities, such as emergency response plan, flood preparedness plan, or flood or hurricane annex to a disaster plan.

Many communities have multi-hazard emergency response plans or comprehensive emergency management plans. Often these are not specific enough to qualify for CRS credit. To receive credit, a flood response plan must identify specific duties and tasks appropriate for the community's flood hazard. Sometimes, the needed level of detail can be found in a flood annex, appendix, or standard operating procedures.

Three items are needed:

1. The applicant must document that the program has been formally adopted by the community's governing board. If this is not noted in the plan, then a copy of the minutes of the meeting when the system or plan was adopted is needed (see example, page 37). Often, if a plan has not been officially adopted or coordinated with other departments, it is not followed during a disaster.

2. Copies of those portions of the plan that cover the elements to be credited. Many plans require several volumes, so only those pages that are appropriate to the credit are needed. The margins must be marked with the acronyms to show where the elements and their requirements are addressed. An example is found on pages 38–50.

Applicants should not send heavy, bulky documents to meet this documentation requirement. Use a narrative report to explain the credit AND SEND ONLY THE APPLICABLE PAGES FOR EACH ELEMENT WITH THE MARGINS MARKED WITH THE APPROPRIATE ACRONYMS. If there are detailed appendices or SOPs for several streams, send the documentation for one stream and note in the narrative report that similar detailed planning has been done for the others.

3. Application for Activity 330 (Outreach Projects) with an outreach project to the community (OPC), or to floodplain properties (OPF), or an Outreach Program Strategy (OPS). The documentation submitted with Activity 330 must include a copy of the brochure, flyer, or newsletter article with a notation in the margin that shows where flood warning and safety are addressed. The project must be distributed each year and must reach at least 90% of the target audience (see Section 331.a in the *CRS Coordinator's Manual*).

### c. Impact Adjustment Calculations

If the community used Options 1 or 3 to determine the impact adjustment ratios, the submittal must include documentation that supports the ratios used. If the community uses Option 1, it is

saying that all buildings within its SFHA are within the floodplains covered by the flood threat recognition system and other elements. If this is not the case, then Options 2 or 3 must be used.

Often the documentation for this activity is provided by someone not familiar with the CRS. For example, while the emergency manager may say that the entire community is covered by the emergency response plan, there may be floodprone areas that are not covered by the flood threat recognition or emergency warning dissemination systems. If Option 1 is used, a written statement that all buildings in the SFHA are covered by the program is sufficient. However, this is only possible if the flood threat recognition system covers all of the floodplains that have buildings in them.

There is no documentation required if Option 2 is used. If Option 3 is used, a map showing the areas covered by the flood warning program is needed.

### d. Evaluation Report

It is important that problems are corrected if the flood warning program does not perform as anticipated. Therefore, if the community is flooded and the damage meets a certain threshold, it must prepare an evaluation report on how the system operated and what improvements may be needed.

The evaluation report is not submitted with the application or modification. By checking item 614.d on the activity worksheet, AW-612 , the community agrees that if there is a flood, it will submit the report with its annual CRS recertification (see Section 214 in the *Coordinator's Manual*).

The report is not required if there was no flood during the year. A report is needed only if the community experienced at least one flood during the previous year that damaged more than 10 buildings, caused more than $50,000 in property damage, or caused the death of one or more persons. For each flood meeting these criteria, this report must describe how the program operated in response to the flood, and any improvements that may be needed. The following format is recommended:

1. The cause or source of the flood and its estimated recurrence interval, if known;

2. Performance of the flood threat recognition system;

3. Dissemination of warnings and public response (i.e., evaluation of EWD);

4. Governmental and private response activities, such as evacuation or flood fighting (i.e., evaluation of ORE);

5. Impact of the flood on critical facilities (i.e., evaluation of CFP);

6. Description of deaths, injuries, property damage, and impact on public health and safety;

7. Examples of damage prevented by the flood warning system and response plan; and

8. Lessons learned and changes needed in the warning program and response plan.

9. The status of implementing the changes recommended by the last post-flood evaluation report.

The report does not need to cover items 3 through 5 if the community is not receiving CRS credit for these elements. If the evaluation identifies shortcomings in the flood warning system or failures in its operation, the report must identify remedial actions that will improve future operation.

This report will generally not need to be longer than a few pages. If an "after action" report was done for other purposes, it will probably include most or all of the needed items. If it does not, the missing items may be included in a cover letter.

## 615 For More Information

In most cases, communities can receive assistance from their state emergency management agency or the National Weather Service in establishing warning programs and planning and conducting drills. Most districts of the U.S. Army Corps of Engineers have handbooks on flood emergency procedures and offer help in developing flood response plans. The Tennessee Valley Authority also has a program to assist communities.

Copies of the following two publications are available at no cost by calling FEMA's publications office at 1-800-480-2520 or by faxing a request to (301) 362-5335:

*Disaster Operations, A Handbook for Local Governments*, FEMA, CPG 1-6, 1981.

*Preparing for Hurricanes and Coastal Flooding: A Handbook for Local Officials*, FEMA and the Office of Ocean and Coastal Resource Management, FEMA-50, 1983.

The following may be ordered from:

National Technical Information Service (NTIS)
U.S. Department of Commerce
Springfield, VA 22161

*Guidelines on Community Local Flood Warning and Response Systems*, Federal Interagency Advisory Committee on Water Data, 1985. (NTIS order number PB 86 109 717, $21.95).

*Community Handbook on Flood Warning and Preparedness Programs*, H. James Owen, for the U.S. Army Corps of Engineers, 1981 (NTIS order number AD-A108 669, $15.95).

The following CRS publications provide more information on aspects related to flood warning. They are available for free by using the order form in Appendix E in the *CRS Coordinator's Manual*, or from:

Flood Publications
NFIP/CRS
P.O. Box 501016
Indianapolis, IN 46250-1016
(317) 848-2898
Fax: (317) 848-3578

*CRS Credit for Outreach Projects*, discusses the requirements for notifying residents of the warning system and flood safety.

*Example Plans*, explains the floodplain management plan adopted by Planton.

# EXAMPLE PROGRAM FOR PLANTON

Many communities have asked for examples of programs that are credited under Activity 610 (Flood Warning Programs). The last part of this document, beginning on page 26, provides an example of the documents submitted by the fictitious community of Planton. The objective of the example is to illustrate the nature of the documentation that is required to be submitted for credit for Activity 610 and to give a sense of the level of detail of information that is needed.

The example uses the fictitious city of Planton as it has been described in other CRS publications. Basically, Planton's SFHA is subject to riverine flooding from two sources, a large river (Planton River) and a smaller stream (Little Creek) (see map, page 29). Planton has also identified a third flood area, a local drainage problem on Eighth Street.

The city's flood problems and flood history are described in the excerpts from its Flood Protection Plan, pages 29–34. The full text of this plan is found in the CRS publication *Example Plans*. Note that this plan is not a flood response plan as credited under this activity. It is a floodplain management plan that reviews and recommends a variety of flood damage reduction activities to be implemented by various departments in the City.

The City has prepared a flood response plan that it calls a "Flood Emergency Plan." This is a large document, so only excerpts are included with the submittal (pages 38–50).

## 611 Credit Points

### a. Flood Threat Recognition System (FTR)

Planton has two different systems for its two rivers. It therefore calculates two different scores for FTR: FTR1 for the Planton River and FTR2 for Little Creek. Because it has no flood threat recognition system for the Eighth Street drainage problem, it receives no credit for any of the elements in this activity. Because the Eighth Street drainage problem is outside of the SFHA, the city can still receive full credit for its program.

**Planton River Prerequisites**. On the Planton River, the community relies on the National Weather Service for warnings of flooding as described in the City's documentation on page 35. The community submitted documentation of the flood threat recognition system that included a description of the flood hazard; areas affected by flooding; flooding impacts; data collection, communications and data analysis components of the warning system; maintenance and testing provisions and flood warning times. The description is included in Planton's Flood Protection Plan, and its CRS submittal comprises excerpts from the Plan, reprinted on pages 29–36 of this publication.

**Planton River Credit Points**.

(1) Twenty points are provided under 611.a.2(a)(1). The three requirements noted on page 3 are met as follows:

(a) The Weather Radio is monitored around the clock by the Police Dispatcher.

(b) The City's Flood Emergency Plan provides instructions for the Police Dispatcher on what to do when an alarm is received.

(c) The National Weather Service provides flood crest predictions for the gage at the State Route 41 bridge.

(2) Twenty points are also provided under Section 611.a.2(a)(2)((b)). Planton has developed a flood stage forecast map that relates the gage prediction to other areas in the community (page 40). This is based on computer modeling and historic flooding.

FTR1 = FTR for the Planton River = 20 + 20 = 40.

**Little Creek Prerequisites**. Flood threat recognition is provided for Little Creek by a local system, which is described on page 35.

**Little Creek Credit Points**. Credit is calculated under the provisions of Section 611.a.2(b), which are detailed on page 4. The City receives 20 points for the automated ALERT system (611.a.2.(b)(1)((b))) and 10 points for the computerized flow model that was installed with the ALERT system (611.a.2(b)(3)((b))). The system has a total of six gages for the Little Creek drainage area, which is 140 square miles. The system is not dense enough to qualify for the 10 points under Section 611.a.2(b)(2).

FTR2 = FTR for Little Creek = 20 + 10 = 30.

## b. Emergency Warning Dissemination (EWD)

Planton's Flood Emergency Plan shows how the requirements for emergency warning dissemination credit are met.

**1. Prerequisites**. The City meets the five prerequisites spelled out on page 5:

(a) It has a creditable flood threat recognition system (see previous section).

(b) The procedures are included in the City's flood response plan (pages 42, 45–46 and 50).

(c) Sirens and mobile public address systems are timely warning methods. The emergency plan also shows how two key facilities are given telephone calls because the fixed sirens and public address systems on police squad cars cannot be heard (page 45–46).

(d) Drills are conducted during the annual Flood Awareness Week (see page 50).

(e) The City mails a notice with the water bills every January. The notice covers the City's warning system and safety precautions (see page 50). Water bills are sent to 95% of the properties within the City's jurisdiction. It qualifies as an outreach project to the community (OPC) and is included as part of the submittal for Activity 330.

**2. Credit Points**. Tasks 1.A. and 2.A. in the Flood Emergency Plan (pages 42 and 45–46) specify the policy for issuing warnings (10 points). Warnings of floods on either stream are disseminated via siren (15 points), police squad car public address system (30 points), and radio station KPLN, which is a member of the Emergency Alert System (10 points).

EWD = 10 + 15 + 30 + 10 = 65.

Because the maximum value for EWD is 60, EWD = 60.

### c. Other Response Efforts (ORE)

Section III of Planton's Flood Emergency Plan lists flood response tasks on pages 41–49.

**1. Prerequisites.** The City meets the three prerequisites spelled out on page 7:

(a) It receives credit for its flood threat recognition system and for disseminating the flood warning to the general public (see two previous sections).

(b) Drills of the tasks are conducted annually as part of the City's Flood Awareness Week (page 50).

(c) The other response tasks are included in the City's flood response plan (pages 41–49).

**2. Credit Points**. Planton's Flood Emergency Plan receives credit under each of the three subsections of Other Response Efforts as noted on pages 7–8:

(a) The tasks in Section III are keyed to the three flood conditions that are based on the Flood Stage Forecast Map (20 points).

(b) The assignments are made to city crews as well as other organizations (10 points).

(c) Each task includes the resources needed (20 points). The resources are summarized in tabular form so the emergency planner can assess whether available staff and equipment are overcommitted (see example on page 47).

ORE = 20 + 10 + 20 = 50.

### d. Critical Facilities Planning (CFP)

The Flood Emergency Plan discusses Planton's critical facilities on pages 43–49. These include facilities in the floodplain, such as the sewage treatment plant and the Farm Service Company, as well as facilities needed during the flood response, such as the high school and the Builders Supply Company (noted in the discussion on flood warning).

**1. Prerequisites**. The City meets the three prerequisites spelled out on page 8:

(a) It receives credit for its flood threat recognition system and disseminating the flood warning to the general public (see Sections 611.a and b on pages 18–19).

(b) The plan and the data on the facilities are updated annually as part of the City's Flood Awareness Week (page 50).

(c) Coordination with critical facilities is in the City's flood response plan (pages 43–49).

**2. Credit Points**. Planton's Flood Emergency Plan receives credit under two of the three subsections of Critical Facilities Planning as noted on pages 8–9:

(a) CFP1: Section VI of the plan includes the names and telephone numbers of contacts at each critical facility on page 49 (10 points).

(b) CFP2: As noted in Tasks 1.C and 2.A (pages 44–45), several facilities are given early flood warning or more detailed notices (20 points).

(c) CFP3: Some of the facilities have their own flood response plans, but the City's Emergency Manager has not yet worked with them, so no credit is requested.

CFP1 = 10  CFP2 = 20  CFP3 = 0

## 612 Impact Adjustment

### a. Option 1

Planton's flood warning and flood response program covers the entire SFHA, i.e., the floodplains of the Planton River and Little Creek. The flood threat recognition system does not cover the Eighth Street drainage area, nor is any flood warning given to these residents. However, because this drainage area is not in the SFHA, it does not need to be counted in the impact adjustment.

Option 1 is used for the elements EWD and ORE because the warnings can reach all buildings in the SFHA and the response tasks cover all flood problem areas. There is no impact adjustment for CFP1 and CFP2. Because Planton's program covers all critical facilities, there is no

adjustment to the score. Since the City is not seeking credit for CFP3, there is no reason to identify the value for rCFP3.

rEWD = 1.0  rORE = 1.0

The CRS Coordinator circled the Option 1 values for rEWD and rORE on the activity worksheet (page 27).

### b. Option 2

Option 2 and Option 3 are used for an element that is not implemented throughout the SFHA. If Planton did not have an accurate count of the number of buildings affected by an element and the number of buildings in the SFHA, it would use Option 2. Planton uses Option 3 because more points are provided and the building numbers are readily available.

### c. Option 3

Planton's flood threat recognition system is not implemented uniformly throughout its floodplain. One system is used for the Planton River while another is used for Little Creek. An impact adjustment is required for FTR to reflect the two different systems used. As noted on pages 18-19, FTR1 represents the Planton River warning program and FTR2 is the Little Creek program. The building counts were done as part of the Flood Protection Plan (pages 32–33).

bFTR1 = the number of buildings in the Planton River floodplain = 25

bFTR2 = the number of buildings in the Little Creek floodplain = 162

bSF = the number of buildings in the SFHA = 187

$$rFTR1 = \frac{bFTR1}{bSF} = \frac{25}{187} = 0.13 \qquad rFTR2 = \frac{bFTR2}{bSF} = \frac{162}{187} = 0.87$$

## 613 Credit Calculation

Planton's credit points are totaled on activity worksheet AW-611, page 27:

a. cFTR1 = FTR1 x rFTR1 = 40 x 0.13 = 5.2

cFTR2 = FTR2 x rFTR2 = 30 x 0.87 = 26.1

cFTR = cFTR1 + cFTR2 = 5.2 + 26.1 = 31.3

If Planton had used Option 2 for its impact adjustment, rFTR would be 0.25. Under Option 2, the City could use the higher value for FTR, 40. cFTR would be 40 x 0.25 = 10. Planton receives more points and has a more accurate measure of the impact of its program by using Option 3.

b. cEWD = EWD x rEWD = 60 x 1.0 = 60

c. cORE = ORE x rORE = 50 x 1.0 = 50

d. cCFP = CFP1 + CFP2 + (CFP3 x rCFP3) = 10 + 20 + (0 x rCFP3) = 10 + 20 + 0 = 30

The results of these formulae are added together to obtain Planton's total credit points for Activity 610:

e. c610 = cFTR + cEWD + cORE + cCFP = 31.3 + 60 + 50 + 30 = 171.3

This value is rounded to the nearest whole number, 171.

## 614 Credit Documentation

The first part of the example is Planton's activity worksheets, AW-610, AW-611 and AW-612 (pages 26–28). Section 614 of AW-611 lists the documentation needed. The City has checked off what is included in its submittal and what it agrees to provide during recertification. The attachments are identified to make the review easier.

Planton's CRS Coordinator has marked the margins of the documents with the appropriate acronyms to show where the City's credited elements appear. This is very important to assist the reviewer. If the reviewer cannot find the documented support for the credit claimed, the community may not receive the credit.

### a. Flood Threat Recognition System Description

The four items listed on pages 13–14 are covered in two attachments to the worksheets:

1. A description of the flood hazard: This is already included in the City's Flood Protection Plan. Rather than rewrite something, the CRS Coordinator simply included the appropriate excerpts from the plan as Attachment A (pages 29–34). The flood hazard is described on page 31.

2. A description of the areas affected by flooding and the impact of flooding on those areas: These topics are covered in Section 5 of the Flood Protection Plan (pages 31–34).

3. A description of the flood threat recognition system: This is a separate description written by Planton's emergency manager and included as Attachment B on pages 35–36.

4. Flood warning lead times: This is also included in Attachment B (page 36).

Attachment B also includes a discussion of how the systems are maintained and tested. In this type of document specifically written for the CRS submittal, the margins do not need to be marked because the key items are the same as the section headings.

### b. Flood Response Plan

As required for credit for elements EWD, ORE, and CFP, Planton's submittal includes the three needed items:

1. Attachment C is a copy of the minutes of the meeting when the City's flood response plan was adopted (page 37).

2. Attachment D is a copy of those portions of the flood response plan that cover the elements to be credited (pages 38–49). The margins have been marked with the acronyms to show where the elements and their requirements are addressed.

3. Attachment E is a copy of Planton's outreach project that the City sends to all of its residents just before Flood Awareness Week each year (page 50).

### c. Impact Adjustment Calculations

Planton's CRS Coordinator noted on the worksheet that the information for the impact adjustment came from Section 5 of the Flood Protection Plan (pages 31–32).

### d. Evaluation Report

This is checked but not provided with this package because it is not submitted with the application or modification. When Planton submits its recertification next year, it may need to include an evaluation report as discussed in Section 614.d on pages 16–17. If the city does not have a flood, the report is not necessary.

# PLANTON'S SUBMITTAL

**610 FLOOD WARNING PROGRAM** Community: Planton

**611 Credit Points:**

| | | FTR 1 | FTR 2 |
|---|---|---|---|
| a. 2. | Flood threat recognition system (FTR) | | |
| (a) (1) | Act on NWS warning (20 points): | 20 | |
| (2) | Prediction model (5 or 20 points): | 20 | |
| (b) (1) | Data collection (15 or 20 points): | | 20 |
| (2) | Gage density (10 points): | | |
| (3) | Prediction model (5 or 10 points): | | 10 |
| | FTR = the total of (a)(1) and (2) OR (b)(1) through (b)(3) : | FTR1 = 40 | FTR2 = 30 |
| b. 2. | Emergency warning dissemination (EWD) | | |
| (a) | Adopted policy (10 points): | 10 | |
| (b) | Outdoor system (15 points): | 15 | |
| (c) | Door to door (30 points): | 30 | |
| (d) | Emergency Alert System (10 points): | 10 | |
| (e) | Telephone (15 points): | | |
| (f) | Cable TV override (10 points): | | |
| (g) | AM transmitters (10 points): | | |
| (h) | Other system: | | |
| | EWD = the total of (a) through (h) above. If the total is greater than 60, then EWD = 60.: | EWD = 60 | |
| c. 2. | Other response efforts (ORE) | | |
| (a) | Plan keyed to predicted flood levels (20 points): | 20 | |
| (b) | Plan assigns tasks (10 points): | 10 | |
| (c) | Plan identifies resources needed (20 points): | 20 | |
| | ORE = the total of (a) through (c) above: | ORE = 50 | |
| d. 2. | Critical facilities planning (CFP) | | |
| (a) | CFP1 Names and numbers (10 points): | CFP1 = 10 | |
| (b) | CFP2 Warning coordination (20 points): | CFP2 = 20 | |
| (c) | CFP3 Facilities have own plans (20 points): | CFP3 = 0 | |

Activity Worksheet AW-610 Edition: January 1999

**610 FLOOD WARNING PROGRAM** Community: Planton

612 Impact Adjustment:

a. Option 1: 1. rFTR = 1.0 (2. rEWD = 1.0) (3. rORE = 1.0) 4. rCFP3 = 1.0

b. Option 2: 1. rFTR = 0.25 2. rEWD = 0.25 3. rORE = 0.25 4. rCFP3 = 0.25

c. Option 3: 1. rFTR = bFTR 1 25 / bSF 187 = 0.13 2. rEWD = bEWD / bSF = ____

3. rORE = bORE / bSF = ____ rFTR 2 = bFTR2 162 / bSF 187 = 0.87

**613 Credit Calculation:**

a. cFTR1= FTR1 40 x rFTR1 0.13 cFTR1 = 5.2

cFTR2 = FTR2 30 x rFTR2 0.87 cFTR2 = 26.1

b. cEWD = EWD 60 x rEWD 1.0 cEWD = 60.0

c. cORE = ORE 50 x rORE 1.0 cORE = 50.0

d. cCFP = CFP1 10 + CFP2 20 + (CFP3 0 x rCFP3 ____) cCFP = 30.0

e. Add lines a through d above: 171.3

c610 = value above rounded to the nearest whole number: c610 = 171

Enter this value on AW-720.

**614 Credit Documentation:** The following documentation is attached to this worksheet with the acronyms marked in the margin:

✓ a. A description of the flood threat recognition system. Attachments A & B

b. [If applying for EWD, ORE, or CFP]:

✓ 1. Documentation of adoption of the flood response plan. Attachment C

✓ 2. Applicable portions of the plan or other documents. Attachment D

✓ 3. A copy of the materials that publicize the warning system. Attachment E

✓ c. [If the impact adjustment uses Options 1 or 3] Documentation showing how the impact adjustment ratios were determined. If Option 3 is used, a map showing the areas covered by the flood warning program is included. See section 5 of Attachment A

Activity Worksheet AW-611 Edition: January 1999

✓ d. If we experience a flood that meets the damage criteria in Section 614.d, we will submit an evaluation report on the flood warning program with our annual recertification.

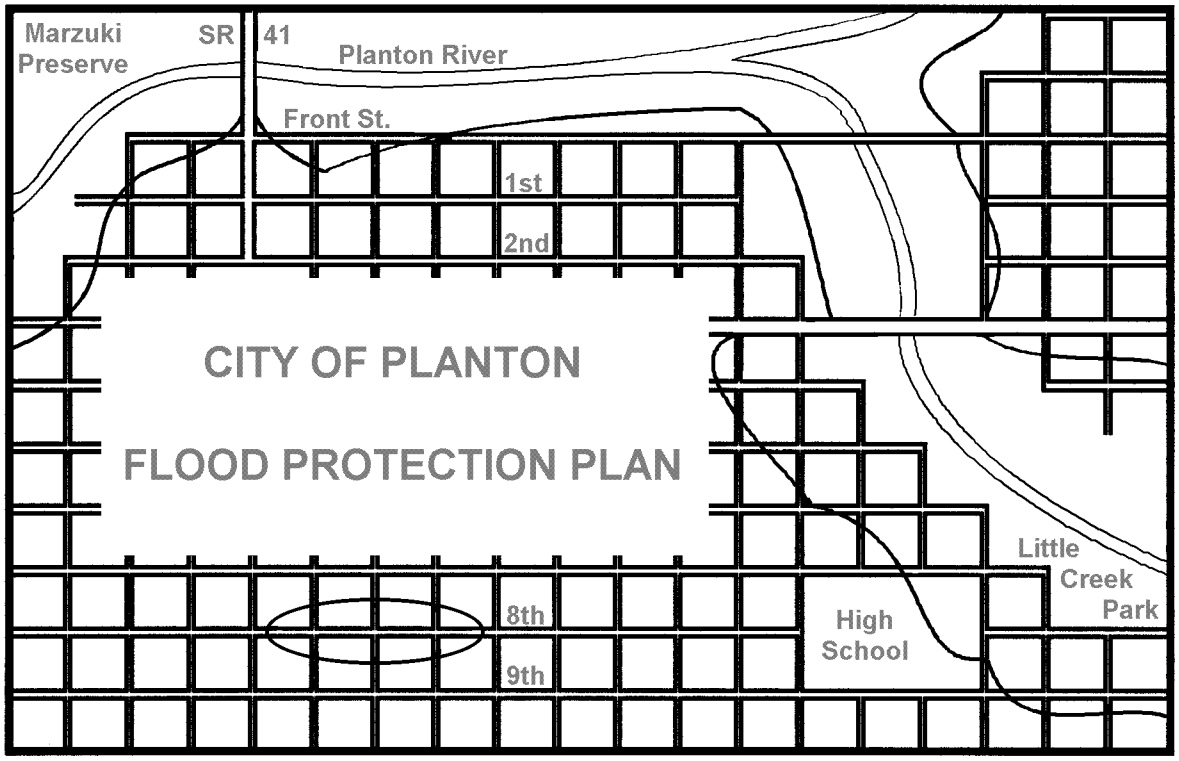
To facilitate verification of this activity, please provide the names of the CRS Coordinator and flood warning contact or emergency manager if other than the CRS Coordinator:

| | CRS Coordinator: | Flood Warning Contact or Emergency Management Coordinator: |
|---|---|---|
| Name: | Paul Whitlow | same |
| Title: | Emergency Manager | |
| Phone: | 555/555-1234 Fax: 555-4321 | Fax: |
| Address: | City Hall | |
| | Planton 00210 | |

Activity Worksheet AW-612 Edition: January 1999

Attachment A

**CITY OF PLANTON**




Prepared by the

Planton Flood Planning Committee

September 8, 1998

# Excerpts

Adopted by the Planton City Council

November 16, 1998

## CITY OF PLANTON

## FLOOD PROTECTION PLAN

## 4. Flood Data

While the worst flood of recent history is estimated to have been a 40-year flood, the Committee selected the 100-year flood for planning purposes. It is felt that Planton has been lucky in the past and that this plan should address the future threat. The 100-year flood is also the flood used by the floodplain ordinance to set protection levels on new construction in the floodplain. The Committee also reviewed the impact of the 500-year flood on the community, especially on critical facilities.



Planton has three areas affected by flooding: the Planton River floodplain, the Little Creek floodplain, and the Eighth Street drainage problem area. The first two have been studied by the Federal Emergency Management Agency (FEMA) and detailed data on them have been published in the Flood Insurance Study for the City.

The 100-year floodplain and the floodway shown in Map 1 on page 2 are based on the Flood Boundary and Floodway Map prepared as part of the Flood Insurance Study. The Flood Boundary and Floodway Map and the Flood Insurance Rate Map come in three panels. Only one panel was printed as there is no mapped floodplain in the southern portions of the City. Therefore, the maps used in this plan cover only the northern one-third of Planton (but all of the overbank flood problem in the City limits).

The Planton River has a drainage area of 1,250 square miles. It is a flat, slow-moving river that drains farm and forest land. Flood velocities do not exceed two feet per second. By monitoring snow depths, ground saturation, river gages, and rain gages, the National Weather Service can provide at least a 24-hour warning of an impending flood.

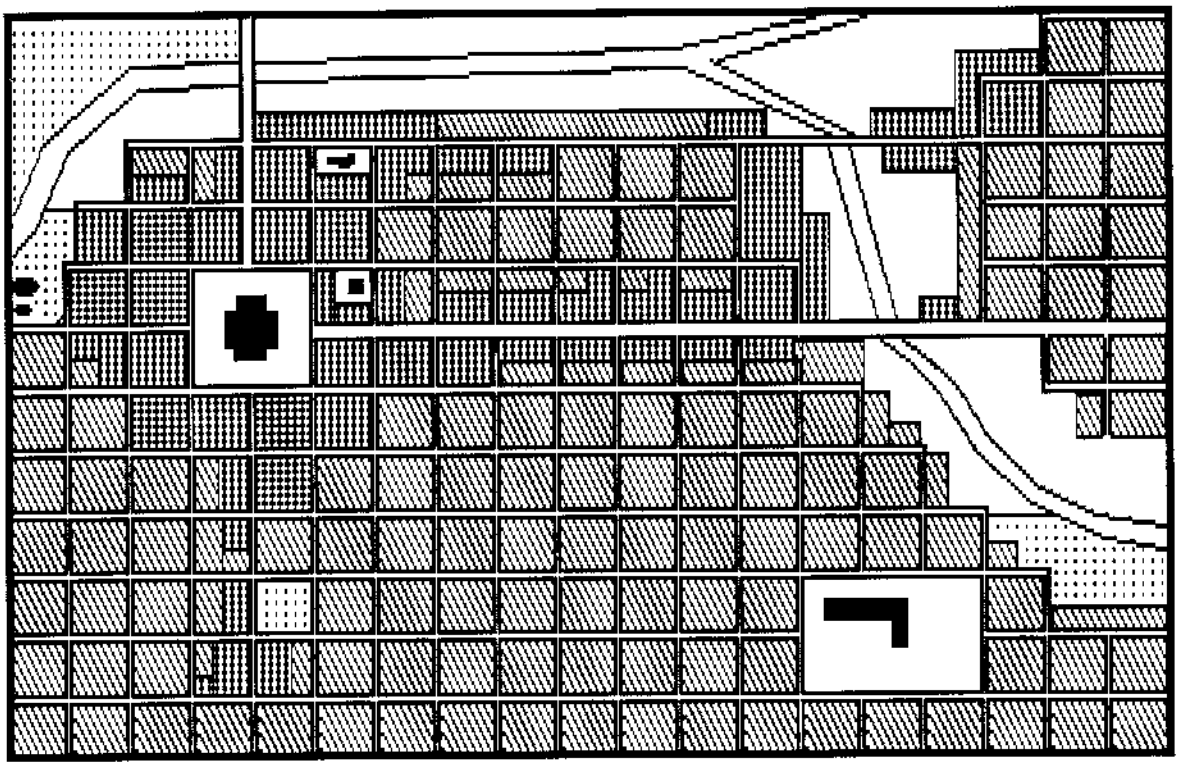
Little Creek drains 140 square miles of farm land. Because of the smaller drainage area, the creek is more responsive to local storms. According to the Flood Insurance Study, flood velocities at the upstream city limits can be as high as 6 feet per second. The Weather Service does not monitor the Creek or its watershed. It can only provide a general flood watch for the area when storms are threatening.

The boundary of the Eighth Street drainage problem area shown on Map 1 is the high water mark recorded during the August 3, 1997, flood. This was the highest flood of record for this area. Many nearby streets were flooded and intersections closed on these dates, but the mapped area is the only area where water is high enough to enter onto private property.

The Eighth Street drainage area was not included in the Flood Insurance Study and does not show as floodplain on the FEMA map. Flooding is caused when heavy local rains are severe enough to overload the storm sewer system. The backed up waters do not have a velocity. There is no National Weather Service flood warning, other than a severe storm warning.

## 5. Floodplain Development

Under natural conditions, a flood causes little or no damage. Nature ensures that floodplain flora and fauna can survive the more frequent inundations. This is the case in the Marzuki

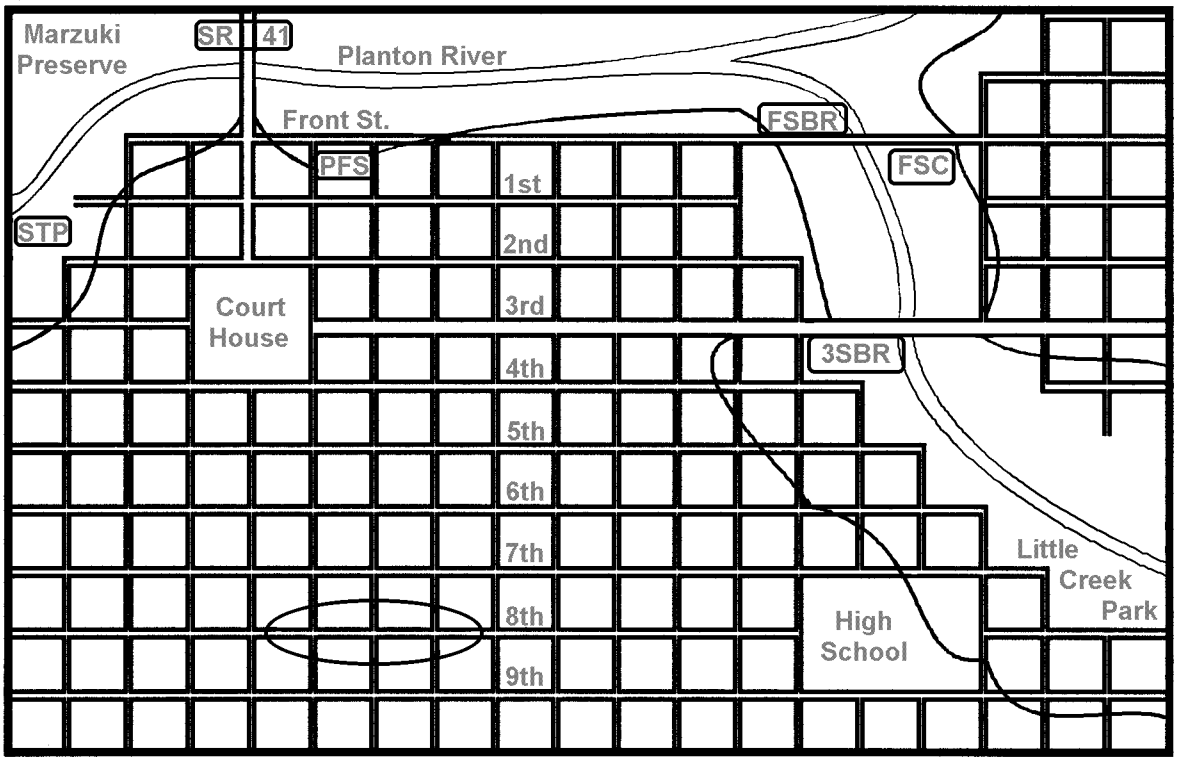



**Map 2. Current Land Use**

Preserve across the Planton River from the downtown. This area has been identified by the Department of Natural Resources as one of the state's few remaining floodplain bottomlands in its natural state. The Marzuki family donated it to the Natural Lands Society to be preserved as an environmental and education site.

Flood problems actually only exist when human development is damaged by nature's water. Unfortunately, Planton has a lot of human development exposed to flooding. The City has three areas affected by flooding, which are shown in Map 2: the Planton River and Little Creek floodplains, which are shown on the Flood Insurance Rate Map (FIRM) as "A Zones," and the Eighth Street drainage area, which is not shown on the FIRM. An inventory of these areas shows the following:

> There are 25 buildings in the Planton River A Zone and 162 in Little Creek's, for a total of 187 floodprone buildings: 149 single-family homes, 8 multi-family buildings with 32 units, 28 business properties, and 2 buildings owned by the City. Only 12 of these buildings have been built or improved since floodplain regulations went into effect in 1983. Many of the older buildings have basements.




| | | | |
|---|---|---|---|
| STP | Sewage treatment plant | SR41 | State Route bridge |
| PFS | Police and fire station | FSBR | Front Street bridge |
| FSC | Farm Service Company | 3SBR | Third Street bridge |

**Map 3. Critical Facilities**

There are 20 single-family homes in the Eighth Street drainage area, all with basements.

The area subject to the greatest damage is the Little Creek floodplain upstream of Third Street. This area suffered the worst during the last three floods, in part because the bridge is an obstruction to flood flows but primarily because of residential development in the floodplain. This area has 129 single-family homes and two multi-family buildings.

All of the 28 businesses are located downstream of Third Street, with the greatest concentration between Third and Front Streets. Two of these businesses have not reopened since the August 1997 flood.

The Committee identified six critical facilities in the three floodplains. Critical facilities are buildings or sites that deserve special attention because they are vital to the community or pose a special hazard during a flood. These are identified on Map 3.

The City's sewage treatment plant was out of commission during the 1988 flood, resulting in pollution of the Planton River. A 100-year flood would damage the control and laboratory building. The City would then be without sewage treatment for days or weeks.

Three bridges cross the two streams: State Route 41, Front Street, and Third Street. The State Route 41 bridge is high enough so it should still be usable during a 100-year flood, but it must be monitored to ensure that it is safe to use. The Front Street bridge is flooded during a 25-year flood and the Third Street bridge went under during the 1988 40-year flood. Closure of the two City bridges isolates the northeastern area of town. Traffic can only reach this area by taking a four-mile route to the north and east that depends on the Route 41 bridge being open.

The City's Police and Fire Station is on the edge of the floodplain. In 1988, fire trucks had to go through a few inches of water on Front Street to reach the station. A 100-year flood would cover Front Street to a depth of two feet in front of the station, cutting off vehicular access. It also probably would flood the building's basement, which includes the City's Emergency Operations Center (EOC).

Flooding of the Farm Service Company's agricultural chemical storage yard is the probable cause of the 1993 fish kill. Chemicals stored in above-ground tanks include fertilizers, pesticides, and herbicides, several of which are kept in toxic concentrations. The fish kill is the subject of a lawsuit brought against the Farm Service Company by the state Environmental Protection Agency.

## 6. Future Development

The Committee was concerned about how future development would affect the City's flood problems. Within Planton's corporate limits, there is little room for new development in the north part of town. The Planton River and Little Creek floodplains offer the only vacant land. However, as most of this land is floodway, the City's floodplain regulations prohibit new obstructions to flood flows. Construction of new buildings on open stilts is unlikely but not prohibited.

The Committee concluded that floodplain development will be of two kinds: home improvements and repairs, and redevelopment of business properties. Except for substantially improved or damaged homes, the former will have little impact on the flood problem. Substantially improved or damaged homes must be brought up to the standards for new construction (which includes flood protection requirements).

On the other hand, business property is at a premium, particularly between Front and Third Streets. Commercial redevelopment can include expansion of existing enterpris storage or other non-building development into the floodplain. It can also include conversion of businesses to more hazardous enterprises, any ty expansion of the Farm Service Company. There are currently to prepa comm to non

Attachment B

**City of Planton CRS Submittal**

**610 - Flood Warning Program**

F T R FLOOD THREAT RECOGNITION SYSTEM

Each of Planton's three flood hazard areas is served by a different approach to flood threat recognition as described in the following.

Planton River Floodplain

Because of the size, shape, and other characteristics of the Planton River watershed, the National Weather Service is able to provide flood warnings on that stream. The credit criteria are met as follows:

(1) The City continually monitors warning statements issued by the National Weather Service. This monitoring is provided by the location in the Police Department Dispatch Center of a tone-activated weather radio. The Dispatch Center is operated on a 24-hour basis.

(2) The Police Dispatcher on duty is responsible for monitoring the system. His or her duties when an alarm is received are spelled out in the City's Flood Emergency Plan, Task 1.A.

(3) The National Weather Service notices are for the Planton River at the State Route 41 bridge gage. By using the Flood Stage Forecast Map, we are able to relate the warning to other parts of town.

Little Creek Floodplain

Flood threat recognition for the Little Creek floodplain is provided by an ALERT system that was installed in 1995. The system consists of five precipitation gages, one stream gage, and a base station located at the Police Department Dispatch Center. It is described in more detail in the "Little Creek Watershed ALERT System Operation Manual," which is kept at the Police Department Dispatch Center.

Data collected by the remote gages are transmitted via a dedicated radio frequency to the base station computer located in the Police Dispatch Center. The data are also received by the National Weather Service. To predict the timing and crest of flood flows, the system uses a commercial software program that was tailored to Little Creek by the consultant that designed the ALERT system.

Eighth Street Drainage Area

There is no specific flood warning from the National Weather Service for this area, other than a severe storm warning. Nor has the City established a flood threat recognition system for this area. However, the area is covered by the City's Flood Emergency Plan.

FLOOD WARNING TIMES

Planton River Floodplain

The National Weather Service's flood warnings for the Planton River have provided more than 24 hours warning before the onset of past flooding.

Little Creek Floodplain

The velocity of Little Creek flows can be as high as 6 feet per second at the upstream city limits. Assuming that velocity to be characteristic of the stream, flood waters could cover a distance of about two miles in 30 minutes. Planton expects to receive at least 30 minutes warning time for floods originating over the upper 90 percent of the watershed area.

MAINTENANCE AND TESTING

The tone-activated radio for receiving warning statements issued by the National Weather Service is in daily use in the Police Department Dispatch Center and is therefore not tested on any periodic basis. The only maintenance required is the replacement of batteries as needed.

The gages, transmission equipment, and base station making up the ALERT system are self-testing on a daily basis. Servicing and complete testing, tuning, and calibration of the equipment is conducted twice annually including replacement of batteries. All routine servicing as well as any repairs are provided by a local electronics repair firm under an annual contract with the City.

The flood threat recognition and warning dissemination program provides for annual drills. The drills are conducted in February, which is the start of our flood season. The drills involve the National Weather Service, State Emergency Management Office, County Office of Emergency Management, City Emergency Manager, City department heads, American Red Cross, mayor, representatives of the radio and television stations serving the area, and the manager of the cable television system.

Minutes
City Council Meeting
July 12, 1995

Attachment C

Roll Call

Council members present included:

Leo Lepetomaine, Mayor
Densil Bandy
Karen Blake
Gene Builder
James Digan
Annabelle Mummert
Keith Vivaros

Call to Order

Mayor Lepetomaine called the meeting to order at 7:05 p.m.

Public Communications

No members of the public appeared to speak to the Council.

Flood Program

Emergency Manager Paul Whitlow reported to the Council that the rainfall gages and other flood warning equipment in the Little Creek watershed were installed and operational. An operations manual that covered the warning procedures and the new "Flood Emergency Plan" were included in the agenda packet. Mr. Whitlow requested the Council's approval for the procedures and the plan.

Following discussion of the procedure for operation of the warning system, the responsibilities of the various City departments, costs borne by the City budget, and the role of the Red Cross, the operations manual and the Flood Emergency Plan were approved unanimously.

Skateboard Bowl Construction

The City attorney presented a report on the proposed skateboard bowl. She noted that current state law would make the city liable for any damages resulting from any injuries unless: a) all of those using the facility wore protective gear including approved helmets and pads for elbows knees; and b) the city provided a supervisor to ensure use of proper safety did not exceed the design limit of eight persons. She prese two alternatives for the Council to consider on escription of

**City of Planton**

Attachment D

*"City of Progress in the Country"*

*Leo Lepetomaine, Mayor*

**FLOOD EMERGENCY PLAN**

Adopted July 12, 1995

## Excerpts

# FLOOD EMERGENCY PLAN
# CITY OF PLANTON

## I. OVERVIEW OF THE PLAN

### A. Objective

This flood emergency plan describes the actions to be taken when flooding appears imminent. The primary objective of the plan is to reduce the risk to life. Actions to reduce property damage and other economic losses are to be undertaken only if the use of resources for these purposes will not interfere with the primary objective.

### B. Scope

This plan covers all incidents of imminent flooding affecting the City of Planton from all sources of flooding. The provisions in the plan are designed to deal with flooding up to the 100-year flood. All departments and employees of the City are directed to cooperate in carrying out the plan when it is activated.

### C. Foundation of the Plan

Flood data, such as flood heights, velocities, and warning times, were collected from the City's Flood Insurance Study, a floodplain information study performed by the U.S. Army Corps of Engineers in 1976, the National Weather Service, historical records, and the consulting firm that designed the ALERT system.

The National Weather Service provides flood crest predictions for the Planton River at the State Route 41 bridge gage. The ALERT System provides advance warning that can be related to Little Creek stages at the 3rd Street Bridge. Other than a warning of imminent storms, no special flood warning is provided to residents of the Eighth Street Drainage Area.

A flood stage forecast map was prepared based on elevations of manholes and other known elevation reference marks. The map is on the wall of the Emergency Operations Center (EOC). A reduced version appears on the next page.

This Flood Emergency Plan is based on three levels of flooding, which are displayed on the flood stage forecast map:

1. Flood Condition A: the ten-year flood. Condition A on the Planton River means a river stage of 17 feet at the State Route 41 bridge. Because the ten-year flood covers mostly undeveloped bottomland on the Planton River, little damage is expected.

   On Little Creek, Flood Condition A approximates the floods of 1981 and 1991. Condition A on Little Creek is a river stage of 10.5 feet at the 3rd Street bridge. At this flood level, as many as 90 homes and businesses are affected and the Front Street Bridge must be closed.

2. Flood Condition B: the 1986 flood, which approximated a 40-year flood on both rivers. Condition B on the Planton River means a river stage of 20.5 feet at the State Route 41 bridge. The sewage treatment plant will be flooded and the Police and Fire Station will be threatened.

   Condition B on Little Creek is a river stage of 15 feet at the Third Street bridge. At this flood level, both the Front and Third Street bridges will be overtopped and approximately 100 homes and businesses will be flooded. Special measures will be needed to provide police and fire protection to the northeast corner of the City, which will be isolated by the flood.

3. Flood Condition C: the 100-year flood according to the Flood Insurance Study and the Flood Insurance Rate Map. Condition C on the Planton River means a river stage of 25 feet at the State Route 41 bridge. In addition to the problems under Condition B, the bridge may have to be closed and the Police and Fire Station should be evacuated.

   Condition C on Little Creek is a river stage of 21 feet at the Third Street bridge. Under Condition B, both bridges and a total of eight apartment houses, 129 homes, and 25 businesses will be affected.

D. Activation of the Plan

This plan, or appropriate parts of the plan, are to be put into operation under any of the following conditions:

1. Issuance of a flood warning for the Planton River or Little Creek by the National Weather Service.
2. Data collected by the ALERT system in the Little Creek watershed indicates that flooding along Little Creek is likely to occur.
3. If direct communications with the National Weather Service are lost and heavy rainfall is known to be occurring in the Planton River watershed.

The decision to activate the plan is to be made by the Emergency Manager or his designated alternate. Upon activation of the plan, notice is to be given by the Emergency Manager to the Mayor and the heads of appropriate City departments. Once activated, the conduct of the plan will be directed by the Emergency Manager with the advice and assistance of liaison personnel from each City department. Only those parts of the plan appropriate to the situation shall be activated.

## III. FLOOD RESPONSE TASKS

The tasks making up the plan are not all intended to be carried out whenever the plan is activated. Some of the tasks are necessary to deal with flooding on the Planton River, some are applicable to flooding on Little Creek, and some pertain to the Eighth Street drainage area.

The tasks to be carried out for each situation are based on the predicted river stage and resulting flood condition. Generally Flood Condition A tasks will be initiated first, followed by Flood Condition B tasks upon direction of the Emergency Manager.

Task Summary

1. Flooding of the Planton River
   A. Issue flood warnings
   B. Provide traffic control along the Planton River
   C. Floodproof sewage treatment plant
   D. Sandbag police and fire station

2. Flooding of Little Creek
   A. Issue flood warnings
   B. Provide traffic control along Little Creek
   C. Monitor and close Front Street bridge and Third Street bridge
   D. Send one police and one fire unit to the northeast corner

3. Flooding of Eighth Street Drainage Area
   A. Provide traffic control around Eighth Street drainage area

4. All cases of flooding
   A. Open the EOC
   B. Provide status reports to the Emergency Broadcast System
   C. Shut off gas and electricity to flooded areas
   D. Open and operate evacuee reception center

EWD

Task 1.A. - Issue flood warnings for the Planton River

The objective of this task is to provide the general public with early notification that a flood along the Planton River is imminent.

Flood Condition A:

1. When the Weather Radio announces a flood threat on the Planton River, the Police Dispatcher notifies the Emergency Manager. Upon the Emergency Manager's approval, the Dispatcher contacts radio station KPLN and activates the City's outdoor warning sirens.
2. KPLN has prepared messages for each flood condition. They list the names of the intersections, bridges, and landmark buildings that are expected to be flooded. The also include flood safety precautions and, under Flood Conditions B or C, designate the Planton High School as the evacuee reception center.
3. The Dispatcher contacts one of the squad cars on patrol. Each car has a copy of the Flood Stage Forecast Map and the radio station's prepared messages. The squad is directed to give warnings to the threatened area over its public address system.
4. Operators of key facilities are notified to implement their emergency operations plans.

Resources required for this task:

Radio and telephone equipment maintained by the Police Department.

Two police dispatchers to provide notifications, keep logs, etc.

One officer and squad car for one hour after the warning is issued.

Flood Conditions B and C: Same as Flood Condition A.

Task 1.B. - Provide traffic control along the Planton River

The objectives of this task are to prevent vehicles from entering the Planton River floodplain and facilitate the travel of evacuees out of the area.

Flood Condition A:

1. After the initial warning is given to the floodprone neighborhoods, the Police Department establishes manned traffic control points at each end of the Front Street bridge and the south side of the SR 41 bridge (see the flood stage forecast map). The Police Dispatcher calls off-duty and auxiliary police and advises them to stand by in case flooding continues or Flood Condition B is declared.
2. The Police Dispatcher ensures that the County Sheriff and the State Police are aware of the situation. The State Police will staff a control point on the north side of the bridge.

Resources required for this task:

Three uniformed or auxiliary police officers for 24-hour staffing of the control point.

Flood Condition B:

1. The Police Department maintains the manned traffic control point at First Street and the SR 41 bridge and establishes new control points at each end of the Third Street bridge (see the flood stage forecast map).
2. The Department of Public Works street crew sets out and monitors unmanned barricades with lights at the four locations shown on the flood stage forecast map.

Resources required for this task:

Six additional uniformed or auxiliary police officers for 24-hour staffing of the control points.

Four Department of Public Works street crewmen to set out and monitor four barricade and light sets (two crewmen each shift).

Flood Condition C:

1. The Police Department maintains the Condition B traffic control points.
2. The Department of Public Works street crew moves the 4 barricades set out under Condition B and sets out and monitors unmanned barricades with lights at 4 new locations shown on the flood stage forecast map.

Resources required for this task:

Nine uniformed or auxiliary police officers for 24-hour staffing of the control points.

Four Department of Public Works street crewmen to move, set out and monitor 8 barricade and light sets (two crewmen each shift).

Task 1.C. - Floodproof sewage treatment plant

The objective of this task is to protect the City's sewage treatment plant from flood waters and to facilitate continued operation during flooding.

Flood Condition A:

1. The Public Works Department assigns one plant operator to stay at the plant and monitor flood levels around the clock.

Resources required for this task:

Two plant operators for 24-hour staffing of the treatment plant.

Flood Condition B:

1. The Public Works Department assigns the entire three-person plant crew and two people from the water plant to fill sandbags and take other measures to protect the laboratory/control building as spelled out in the treatment plant's flood emergency plan.
2. One Street Division truck operator delivers sand from the Public Works garage and sandbags from the Department's supply shed and plastic sheeting from Builders Supply Company.
3. When the sandbagging is complete, the three-person plant crew stays on the high ground at the plant site to monitor flood levels and maintain the protection measures around the clock.

Resources required for this task:

Two sewage treatment plant operators for 24-hour staffing of the treatment plant.

Three sewage treatment plant crewmen for sandbagging and maintenance.

Two water plant crew members to assist in sandbagging.

15 - 20x25 foot rolls of plastic sheeting

1,000 sandbags

20 cubic yards of sand

One dump truck and operator for two hours to deliver sand

Flood Condition C: Same as Flood Condition B.

Task 1.D. - Sandbag police and fire station

EWD

Task 2.A. - Issue flood warnings for Little Creek

The objective of this task is to provide the general public with early notification that a flood along Little Creek is imminent.

Flood Condition A:

1. When the ALERT system alarm sounds, the Police Dispatcher notifies the Emergency Manager. Upon the Emergency Manager's approval, the Dispatcher contacts radio station KPLN and activates the City's outdoor warning sirens.
2. KPLN has prepared messages for each flood condition. They list the names of the intersections, bridges, and landmark buildings that are expected to be flooded. They also include flood safety precautions and designate the Planton High School as the evacuee reception center.
3. The Dispatcher contacts two of the squad cars currently on patrol. Each car has a copy of the Flood Stage Forecast Map and the radio station's prepared messages. The squads are directed to give warnings to the threatened area over their vehicles' public address systems.

Resources required for this task:

Radio and telephone equipment maintained by the Police Department.

Two dispatchers to provide notifications, keep logs, etc.

Two officers and squad cars are needed for one-half hour after the warning is issued.

Flood Condition B: 1, 2, and 3 are the same as Flood Condition A.

1. The Dispatcher calls the Mummert Machine Works and Dorsey Mills to give the warning to the plant manager. Outdoor warning systems for these two facilities in the Little Creek floodplain are ineffective due to the noise levels in these facilities.
2. The Dispatcher calls the Planton High School and the American Red Cross chapter so they can prepare the High School as a temporary shelter for evacuees.

Resources required for this task: Same as for Flood Condition A

Flood Condition C: Same as for Flood Condition B.

Task 2.B. - Provide traffic control along Little Creek

The objective of this task is to provide means

III. SUMMARY OF NEEDED RESOURCES

The resources needed to carry out this Flood Emergency Plan and their location are shown in Tables 1, 2, and 3 for Flood Conditions A, B, and C, respectively.

Table 3
Needed Resources for Flood Condition C

| Task | 1.A | 1.B | 1.C | 1.D | 2.A | 2.B |
|---|---|---|---|---|---|---|
| Personnel | | | | | | |
| Police | 3 | 9 | | 5 | 4 | |
| Fire | | | | 8 | | |
| Public Works | | 4 | 8 | | | |
| Planton High School | | | | | | |
| Power & Light Co. | | | | | | |
| Red Cross | | | | | | |
| Equipment | | | | | | |
| Barricades[1] | | 8 | | | | |
| Light sets for barricades[1] | | 8 | | | | |
| Plastic sheeting (rolls)[2] | | | 15 | 3 | | |
| Sandbags[1] | | | 1,000 | 200 | | |
| Sand (cubic yards)[3] | | | 20 | 3 | | |

1 - Located at Public Works Dept. supply shed.
2 - Obtain as needed from Builders Supply Company.
3 - Located in bins behind Public Works Dept. garage.

## IV. STAFF AND VOLUNTEER ASSIGNMENTS

### Emergency Manager

The Emergency Manager is responsible for the overall direction of the conduct of this flood emergency plan. Specifically, the Emergency Manager or designated alternate is responsible for:

1. Activating the plan, opening the EOC, and directing the conduct of those tasks appropriate to the situation.
2. Notifying the Mayor, members of the City Council, Police Chief, Fire Chief, and Director of Public Works whenever the plan is activated and keeping them apprised of conditions.
3. Authorizing such purchases or requisitions of materials and supplies as are needed to carry out the emergency response tasks.
4. Monitoring the implementation of this plan.

### Police Department

When notified of the activation of this plan, the dispatcher on duty will contact the Police Chief who will:

1. Designate a department liaison to serve in the Emergency Operations Center until relieved.
2. Direct that all departmental staff be put on standby and that all vehicles be fueled and serviced as needed.
3. Ensure the implementation of Tasks 1.A, 1.B, 1.D, 2.A, 2.B, 2.C, 2.D, and 3.A.

### Public Works Department

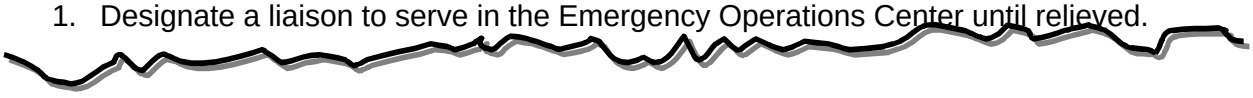
When notified of the activation of this plan, the Director of Public Works shall:

1. Designate a liaison to serve in the Emergency Operations Center until relieved.
2. Provide for staffing of the Public Works Department office on a 24-hour basis.
3. Ensure implementation of Tasks 1.B, 1.C, 2.B, and 3.A.

### Fire Department

When notified of the activation of this plan, the Fire Chief shall:

1. Designate a liaison to serve in the Emergency Operations Center until relieved.



American Red Cross

Pursuant to the Memorandum of Agreement between the City, the Planton School District, and the American Red Cross, the Red Cross shall operate a shelter for evacuees at the Planton High School. The responsibilities assigned to the Red Cross are spelled out in that document and generally include:

1. Provision of a shelter manager with appropriate training and experience.
2. Provision of at least 5 shelter workers.
3. Provision of food for up to 300 evacuees for at least two meals.
4. Operation of a registration center for evacuees.

C F P

## VI. KEY FACILITIES

Table 4 lists key facilities that have an important role in conduct of flood emergency operations through implementing their own emergency plan to either reduce damage or assist in successful conduct of the City's emergency response plan.

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Table 4

Key Facility Contacts

| Facility | Address | Contact | Phone |
|---|---|---|---|
| Planton Hospital | 418 Hall St. | Thelma Goody<br>Lynda Peters | 555/321-1443 (Office)<br>(Alternate, same phone) |
| Planton High School | 950 E. 7th | Fred Mertz | 555/321-1234 (Office)<br>555/321-0991 (Hom |
| Sewage treatment plant | 301 W. 3rd | J. P. Sludge | 555/321- |
| Farm Service Company | 1120 W. Front | | |
| Hy-Qual Water Co. | | | |
| American Red Cross | | | |
| Builders Supply Co. | | | |

VIII. FLOOD AWARENESS WEEK

The City sponsors a Flood Awareness Week every February. The following activities are scheduled during that week:

1. A declaration of Flood Awareness Week by the Mayor and City Council. The weekly "Ask the Mayor" program on KPLN discusses the flood hazard, flood warnings, and flood safety.

EWD ORE 2. Drills of this Flood Emergency Plan are scheduled by the Emergency Manager. To the extent possible, other parties to the drills shall not be given advance notification of their exact time.

EWD 3. Flyers are put in the January water bills. They tell people that when they hear the sirens, they should tune their radios to KPLN for more information on the warning.

CFP 4. The Emergency Manager updates this plan and all related documents.

5. The Emergency Manager renews all contracts and memoranda of agreement.

6. The Emergency Manager briefs all new City employees on their roles in carrying out the plan.

All revisions of this plan shall be prepared by the Emergency Manager within two weeks of the practice drill. While preparing the revisions to the plan, the Emergency Manager coordinates with the Planning and Building Departments to determine what conditions have changed and need to be incorporated in the Flood Emergency Plan.

# Attachment E

The attached flyer is updated and put in the January water bills every year. They are sent to all water customers in Planton and some outside the City limits.

**Spring is Planton's Flood Season**

And February __is our Flood Awareness Week. Be prepared: check with the Building Department or the Emergency Manager in City Hall to see if you live or work in a floodplain.

Know our flood warning signals: When you hear a long steady fire siren blowing, turn on your radio and tune to KPLN (780 on your AM dial) or, if you have cable TV, turn on Channel 33. You may also hear a warning over police car loudspeakers.

If you are in an area subject to flooding or you have to walk or drive through an area that is or will be flooded, follow these safety precautions:

Do not walk through flowing water. Drowning is the number one cause of flood deaths, mostly during flash floods. Currents can be deceptive; six inches of moving water can knock you off your feet. If you walk in standing water, use a pole or stick to feel your way.

Do not drive through a flooded area. More people drown in their cars than anywhere else. Don't drive around road barriers; the road or bridge may be washed out.

Stay away from power lines and electrical wires. The number two flood killer after drowning is electrocution. Electrical current can travel through water. Report downed power lines to the Power & Light Company or the City Emergency Management Office.

Turn off your electricity at the fuse or breaker box. Some appliances, such as television sets, keep electrical charges even after they have been unplugged. Don't use appliances or motors that have gotten wet unless they have been taken apart, cleaned, and dried.

Look out for animals, especially snakes. Small animals that have been flooded out of their homes may seek shelter in yours. Use a pole or stick to poke and turn things over and scare away small animals.

Look before you step. After a flood, the ground and floors are covered with debris including broken bottles and nails. Floors and stairs that have been covered with mud can be very slippery.

Be alert for gas leaks. Use a flashlight to inspect for damage. Don't smoke or use candles, lanterns, or open flames unless you know the gas has been turned off and the area has been ventilated.